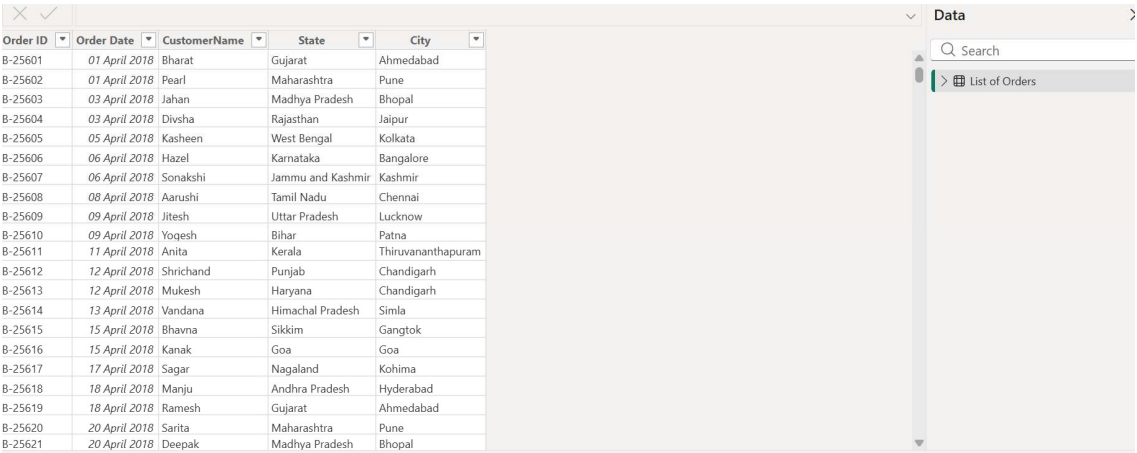


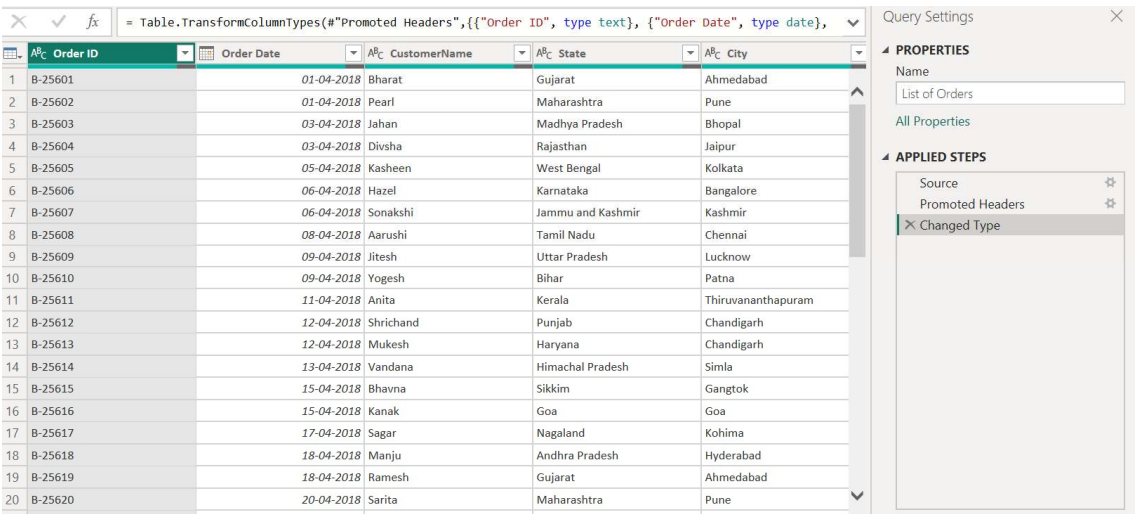
Power BI Assignment 1 – Data Transformation & Data Modeling

1.Import “List of Orders.csv” into Power BI.



Order ID	Order Date	CustomerName	State	City
B-25601	01 April 2018	Bharat	Gujarat	Ahmedabad
B-25602	01 April 2018	Pearl	Maharashtra	Pune
B-25603	03 April 2018	Jahan	Madhya Pradesh	Bhopal
B-25604	03 April 2018	Divsha	Rajasthan	Jaipur
B-25605	05 April 2018	Kasheen	West Bengal	Kolkata
B-25606	06 April 2018	Hazel	Karnataka	Bangalore
B-25607	06 April 2018	Sonakshi	Jammu and Kashmir	Kashmir
B-25608	08 April 2018	Aarushi	Tamil Nadu	Chennai
B-25609	09 April 2018	Jitesh	Uttar Pradesh	Lucknow
B-25610	09 April 2018	Yogesh	Bihar	Patna
B-25611	11 April 2018	Anita	Kerala	Thiruvananthapuram
B-25612	12 April 2018	Shrichand	Punjab	Chandigarh
B-25613	12 April 2018	Mukesh	Haryana	Chandigarh
B-25614	13 April 2018	Vandana	Himachal Pradesh	Simla
B-25615	15 April 2018	Bhavna	Sikkim	Gangtok
B-25616	15 April 2018	Kanak	Goa	Goa
B-25617	17 April 2018	Sagar	Nagaland	Kohima
B-25618	18 April 2018	Manju	Andhra Pradesh	Hyderabad
B-25619	18 April 2018	Ramesh	Gujarat	Ahmedabad
B-25620	20 April 2018	Sarita	Maharashtra	Pune
B-25621	20 April 2018	Deepak	Madhya Pradesh	Bhopal

2. Open “List of Orders” in Power Query Editor by clicking on ‘Transform’.



Order ID	Order Date	CustomerName	State	City
B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad
B-25602	01-04-2018	Pearl	Maharashtra	Pune
B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal
B-25604	03-04-2018	Divsha	Rajasthan	Jaipur
B-25605	05-04-2018	Kasheen	West Bengal	Kolkata
B-25606	06-04-2018	Hazel	Karnataka	Bangalore
B-25607	06-04-2018	Sonakshi	Jammu and Kashmir	Kashmir
B-25608	08-04-2018	Aarushi	Tamil Nadu	Chennai
B-25609	09-04-2018	Jitesh	Uttar Pradesh	Lucknow
B-25610	09-04-2018	Yogesh	Bihar	Patna
B-25611	11-04-2018	Anita	Kerala	Thiruvananthapuram
B-25612	12-04-2018	Shrichand	Punjab	Chandigarh
B-25613	12-04-2018	Mukesh	Haryana	Chandigarh
B-25614	13-04-2018	Vandana	Himachal Pradesh	Simla
B-25615	15-04-2018	Bhavna	Sikkim	Gangtok
B-25616	15-04-2018	Kanak	Goa	Goa
B-25617	17-04-2018	Sagar	Nagaland	Kohima
B-25618	18-04-2018	Manju	Andhra Pradesh	Hyderabad
B-25619	18-04-2018	Ramesh	Gujarat	Ahmedabad
B-25620	20-04-2018	Sarita	Maharashtra	Pune

3. Import “Order Details.csv” and “Sales target.csv” into Power Query Editor.

Queries [3]

fx = Table.TransformColumnTypes(#"Promoted Headers",{"Order ID", type text}, {"Amount", Int64.Type}, {"Profit", Int64.Type}, {"Quantity", Int64.Type}, {"Category", type text}, {"Sub-Category", type text})

	Order ID	Amount	Profit	Quantity	Category	Sub-Category
1	B-25601	1275	-1148	7	Furniture	Bookcases
2	B-25601	66	-12	5	Clothing	Stole
3	B-25601	8	-2	3	Clothing	Hankerchief
4	B-25601	80	-56	4	Electronics	Electronic Games
5	B-25602	168	-111	2	Electronics	Phones
6	B-25602	424	-272	5	Electronics	Phones
7	B-25602	2617	1151	4	Electronics	Phones
8	B-25602	561	212	3	Clothing	Saree
9	B-25602	119	-5	8	Clothing	Saree
10	B-25603	1355	-60	5	Clothing	Trousers
11	B-25603	24	-30	1	Furniture	Chairs
12	B-25603	193	-166	3	Clothing	Saree
13	B-25603	180	5	3	Clothing	Trousers
14	B-25603	116	16	4	Clothing	Stole
15	B-25603	107	36	6	Clothing	Stole
16	B-25603	12	1	2	Clothing	Hankerchief
17	B-25603	38	18	1	Clothing	Kurti
18	B-25604	65	17	2	Clothing	T-shirt
19	B-25604	157	5	9	Clothing	Saree
20	B-25605	75	0	7	Clothing	Saree
21	B-25606	87	4	2	Clothing	Shirt

4.Restrict the "List of Orders" table to only the first 500 rows.

Queries [3]

fx = Table.SelectRows(#"Changed Type", each [Order ID] <> null and [Order ID] <> "")

Query Settings

PROPERTIES

Name

List of Orders

All Properties

APPLIED STEPS

Source

Promoted Headers

Changed Type

Filtered Rows

	Order ID	Order Date	CustomerName	State	City
481	B-26081	22-03-2019	Aarushi	Tamil Nadu	Chennai
482	B-26082	23-03-2019	Iltesh	Uttar Pradesh	Lucknow
483	B-26083	24-03-2019	Yogesh	Bihar	Patna
484	B-26084	25-03-2019	Anita	Kerala	Thiruvananthapuram
485	B-26085	26-03-2019	Shrichand	Punjab	Chandigarh
486	B-26086	26-03-2019	Mukesh	Haryana	Chandigarh
487	B-26087	26-03-2019	Vandana	Himachal Pradesh	Simla
488	B-26088	26-03-2019	Bhavna	Sikkim	Gangtok
489	B-26089	26-03-2019	Kanak	Goa	Goa
490	B-26090	27-03-2019	Sagar	Nagaland	Kohima
491	B-26091	27-03-2019	Manju	Andhra Pradesh	Hyderabad
492	B-26092	27-03-2019	Ramesh	Gujarat	Ahmedabad
493	B-26093	27-03-2019	Sarita	Maharashtra	Pune
494	B-26094	27-03-2019	Deepak	Madhya Pradesh	Bhopal
495	B-26095	28-03-2019	Monisha	Rajasthan	Jaipur
496	B-26096	28-03-2019	Atharv	West Bengal	Kolkata
497	B-26097	28-03-2019	Vini	Karnataka	Bangalore
498	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
499	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
500	B-26100	31-03-2019	Hitika	Madhya Pradesh	Indore

5.Ensure the “Order Date” column in the “List of Orders” table is set to data type 'Date'.

6. Change the data type of “Amount” and “Target” columns to ‘Fixed Decimal Number’.

Export query results

Refresh Preview

Advanced Editor

Properties

Manage

Choose Columns

Remove Columns

Keep Rows

Remove Rows

Sort

Split Column

Group By

Data Type: Date

Use First Row as Headers

Replace Values

Transform

Table.TransformColumnTypes(#"Filtered Rows",{{"Order Date", type date}})

	Order Date	CustomerName	State	City
	01-04-2018	Bharat	Gujarat	Ahmedabad
	01-04-2018	Pearl	Maharashtra	Pune
	03-04-2018	Jahan	Madhya Pradesh	Bhopal
	03-04-2018	Divsha	Rajasthan	Jaipur
	05-04-2018	Kasheen	West Bengal	Kolkata
	06-04-2018	Hazel	Karnataka	Bangalore
	06-04-2018	Sonakshi	Jammu and Kashmir	Kashmir

Query Settings

PROPERTIES

Name

List of

All Pro

APPLIED STEPS

So

Pr

Properties
Advanced Editor
Manage

Query

Choose Columns
Remove Columns
Manage Columns

Keep Rows
Remove Rows
Reduce Rows

Sort

Split Column
Group By

Data Type: Fixed decimal number
Use First Row as Headers
Replace Values

Transform

types("#Promoted Headers",{{"Month of Order Date", type date}, {"Category",

Query Set

PROPER
Name
Sales ta
All Prop
APPLIED

	\$ Target
	10,400.00
	10,500.00
	10,600.00
	10,800.00
	10,900.00

Import query results
Refresh Preview
Output Data

Properties
Advanced Editor
Manage

Query

Choose Columns
Remove Columns
Manage Columns

Keep Rows
Remove Rows
Reduce Rows

Sort

Split Column
Group By

Data Type: Fixed decimal number
Use First Row as Headers
Replace Values

Transform

.TransformColumnTypes("#Promoted Headers",{{"Order ID", type text}, {"Amount", Currency.Type},

Query Set

PROPER
Name
Order D
All Prop
APPLIED

\$ Amount	Profit	Quantity	Category
1,275.00	-1148	7	Furniture
66.00	-12	5	Clothing
8.00	-2	3	Clothing
80.00	-56	4	Electronics

7.Format the "CustomerName" column into proper case, ensuring consistent capitalization for each word.

Table.TransformColumns("#Changed Type1",{{"CustomerName", Text.Proper, type text}})

Query Settings

PROPERTIES
Name
List of Orders
All Properties

APPLIED STEPS
Source
Promoted Headers
Changed Type
Filtered Rows
Changed Type1
Capitalized Each Word

Order ID	Order Date	CustomerName	State	City
1 B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad
2 B-25602	01-04-2018	Pearl	Maharashtra	Pune
3 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal
4 B-25604	03-04-2018	Divsha	Rajasthan	Jaipur
5 B-25605	05-04-2018	Kasheen	West Bengal	Kolkata
6 B-25606	06-04-2018	Hazel	Karnataka	Bangalore
7 B-25607	06-04-2018	Sonakshi	Jammu and Kashmir	Kashmir
8 B-25608	08-04-2018	Aarushi	Tamil Nadu	Chennai
9 B-25609	09-04-2018	Jitesh	Uttar Pradesh	Lucknow
10 B-25610	09-04-2018	Yogesh	Bihar	Patna
11 B-25611	11-04-2018	Anita	Kerala	Thiruvananthapuram
12 B-25612	12-04-2018	Shrichand	Punjab	Chandigarh
13 B-25613	12-04-2018	Mukesh	Haryana	Chandigarh
14 B-25614	13-04-2018	Vandana	Himachal Pradesh	Simla
15 B-25615	15-04-2018	Bhavna	Sikkim	Gangtok
16 B-25616	15-04-2018	Kanak	Goa	Goa
17 B-25617	17-04-2018	Sagar	Nagaland	Kohima
18 B-25618	18-04-2018	Manju	Andhra Pradesh	Hyderabad
19 B-25619	18-04-2018	Ramesh	Gujarat	Ahmedabad

8.Merge the "State" and "City" columns to create a new column named "Location" in the format 'City, State'.

Query Settings

Query: = Table.RenameColumns("#merged city and state",{{"Merged.1", "Location"}})

	Order Date	CustomerName	State	City	Location
1	01-04-2018	Bharat	Gujarat	Ahmedabad	Ahmedabad,Gujarat
2	01-04-2018	Pearl	Maharashtra	Pune	Pune,Maharashtra
3	03-04-2018	Jahan	Madhya Pradesh	Bhopal	Bhopal,Madhya Pradesh
4	03-04-2018	Divsha	Rajasthan	Jaipur	Jaipur,Rajasthan
5	05-04-2018	Kasheen	West Bengal	Kolkata	Kolkata,West Bengal
6	06-04-2018	Hazel	Karnataka	Bangalore	Bangalore,Karnataka
7	06-04-2018	Sonakshi	Jammu and Kashmir	Kashmir	Kashmir,Jammu and Kashmir
8	08-04-2018	Aarushi	Tamil Nadu	Chennai	Chennai,Tamil Nadu
9	09-04-2018	Jitesh	Uttar Pradesh	Lucknow	Lucknow,Uttar Pradesh
10	09-04-2018	Yogesh	Bihar	Patna	Patna,Bihar
11	11-04-2018	Anita	Kerala	Thiruvananthapuram	Thiruvananthapuram,Kerala
12	12-04-2018	Shrichand	Punjab	Chandigarh	Chandigarh,Punjab
13	12-04-2018	Mukesh	Haryana	Chandigarh	Chandigarh,Haryana
14	13-04-2018	Vandana	Himachal Pradesh	Simla	Simla,Himachal Pradesh
15	15-04-2018	Bhavna	Sikkim	Ganetok	Ganetok,Sikkim

Query Settings

PROPERTIES

Name

List of Orders

APPLIED STEPS

Source

Promoted Headers

Changed Type

Filtered Rows

Changed Type1

Capitalized Each Word

merged city and state

Renamed Columns1

9.Create a new custom column named "Profit Margin" as the percentage of "Profit" divided by "Amount".

Query Settings

Query: = Table.TransformColumnTypes("#profit/amount",{{"Profit Margin", Percentage.Type}})

	Profit	Quantity	Category	Sub-Category	% Profit Margin
1	-1148	7	Furniture	Bookcases	-90.04%
2	-12	5	Clothing	Stole	-18.18%
3	-2	3	Clothing	Hankerchief	-25.00%
4	-56	4	Electronics	Electronic Games	-70.00%
5	-111	2	Electronics	Phones	-66.07%
6	-272	5	Electronics	Phones	-64.15%
7	1151	4	Electronics	Phones	43.98%
8	212	3	Clothing	Saree	37.79%
9	-5	8	Clothing	Saree	-4.20%
10	-60	5	Clothing	Trousers	-4.43%
11	-30	1	Furniture	Chairs	-125.00%
12	-166	3	Clothing	Saree	-86.01%
13	5	3	Clothing	Trousers	2.78%
14	16	4	Clothing	Stole	13.79%
15	36	6	Clothing	Stole	33.64%

Query Settings

PROPERTIES

Name

Order Details

APPLIED STEPS

Source

Promoted Headers

Changed Type

profit/amount

Profit/Amount into percentage

Profit status using conditions

Removed Duplicates

10.Add a new conditional column named "Profit Status" based on the values in the "Profit" column. The conditions are as follows: if the profit is less than 0, the label should be "Loss"; if the profit equals 0, the label should be "Break-Even"; and if the profit is greater than 0, the label should be "Profit".

= Table.AddColumn(#"Profit/Amount into percentage", "Profit Status", each if [Profit] < 0 then "Loss"					
Quantity	Category	Sub-Category	% Profit Margin	Profit Status	
4	Electronics	Electronic Games	-70.00%	Loss	
5	Electronics	Phones	-66.07%	Loss	
6	Electronics	Phones	-64.15%	Loss	
7	Electronics	Phones	43.98%	Profit	
8	Clothing	Saree	37.79%	Profit	
9	Clothing	Saree	-4.20%	Loss	
10	Clothing	Trousers	-4.43%	Loss	
11	Furniture	Chairs	-125.00%	Loss	
12	Clothing	Saree	-86.01%	Loss	
13	Clothing	Trousers	2.78%	Profit	
14	Clothing	Stole	13.79%	Profit	
15	Clothing	Stole	33.64%	Profit	
16	Clothing	Hankerchief	8.33%	Profit	
17	Clothing	Kurti	47.37%	Profit	
18	Clothing	T-shirt	26.15%	Profit	
19	Clothing	Saree	3.18%	Profit	
20	Clothing	Saree	0.00%	Break Even Point	
21	Clothing	Shirt	4.60%	Profit	
22	Clothing	Leggings	30.00%	Profit	
23	Furniture	Tables	-136.66%	Loss	

Query Settings

PROPERTIES

Name

Order Details

All Properties

APPLIED STEPS

Source

Promoted Headers

Changed Type

profit/amount

Profit/Amount into percentage

Profit status using conditions

Merging Data (Joins)

Merge the "List of Orders" and "Order Details" tables into a new single table named "Orders Data" based on the "Order ID" relationship.

= Table.ExpandTableColumn(Source, "Order Details", {"Order ID", "Amount", "Profit", "Quantity",					
Order ID	Order Date	CustomerName	State	City	
1 B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad	
2 B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad	
3 B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad	
4 B-25601	01-04-2018	Bharat	Gujarat	Ahmedabad	
5 B-25602	01-04-2018	Pearl	Maharashtra	Pune	
6 B-25602	01-04-2018	Pearl	Maharashtra	Pune	
7 B-25602	01-04-2018	Pearl	Maharashtra	Pune	
8 B-25602	01-04-2018	Pearl	Maharashtra	Pune	
9 B-25602	01-04-2018	Pearl	Maharashtra	Pune	
10 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	
11 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	
12 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	
13 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	
14 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	
15 B-25603	03-04-2018	Jahan	Madhya Pradesh	Bhopal	

Handling Missing Data & Duplicate Data

	Order ID	Amount	Profit	Quantity	Category
1	B-25601	1,275.00	-1148	7	Furniture
2	B-25601	66.00	-12	5	Clothing
3	B-25601	8.00	-2	3	Clothing
4	B-25601	80.00	-56	4	Electronics
5	B-25602	168.00	-111	2	Electronics
6	B-25602	424.00	-272	5	Electronics
7	B-25602	2,617.00	1151	4	Electronics
8	B-25602	561.00	212	3	Clothing
9	B-25602	119.00	-5	8	Clothing
10	B-25603	1,355.00	-60	5	Clothing
11	B-25603	24.00	-30	1	Furniture
12	B-25603	193.00	-166	3	Clothing
13	B-25603	180.00	5	3	Clothing
14	B-25603	116.00	16	4	Clothing
15	B-25603	107.00	36	6	Clothing

Observation:

There is no missing and duplicates value.

Sorting and Filtering Data

1.Sort the orders by Order Date in descending order to analyze recent trends

	Order ID	Order Date	CustomerName	State	City
1	B-26100	31-03-2019	Hitika	Madhya Pradesh	Indore
2	B-26100	31-03-2019	Hitika	Madhya Pradesh	Indore
3	B-26100	31-03-2019	Hitika	Madhya Pradesh	Indore
4	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
5	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
6	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
7	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
8	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
9	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
10	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
11	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
12	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
13	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir

2.Filter the orders to focus only on a specific state (e.g., Tamil Nadu) for regional analysis

	Order ID	Order Date	CustomerName	State	City
1	B-25608	08-04-2018	Aarushi	Tamil Nadu	Chennai
2	B-25698	23-06-2018	Amisha	Tamil Nadu	Chennai
3	B-25716	11-07-2018	Surabhi	Tamil Nadu	Chennai
4	B-25788	21-09-2018	Dinesh	Tamil Nadu	Chennai
5	B-25860	15-11-2018	Akshay	Tamil Nadu	Chennai
6	B-26008	09-02-2019	Kalyani	Tamil Nadu	Chennai
7	B-26018	14-02-2019	Aarushi	Tamil Nadu	Chennai
8	B-26081	22-03-2019	Aarushi	Tamil Nadu	Chennai

Grouping and Aggregating Data

1. Duplicate the “Order Details” table and calculate the count of each Order ID, average profit by Category

✕

✓

fx

= Table.Group(#"Removed Duplicates", {"Category"}, {{"average profit", each List.Average([Profit])},

✕

Table

Category

1.2

average profit

1	Furniture	9.456790123
2	Clothing	11.76290832
3	Electronics	34.07142857

Query Settings

✕

▲ PROPERTIES

Name

Order Details

All Properties

▲ APPLIED STEPS

Source

Promoted Headers

Changed Type

profit/amount

Profit/Amount into percentage

Profit status using conditions

Removed Duplicates

average profit by category

2. Duplicate the “Sales Target” table and aggregate the total target amount by Month of Order Date.

Query Settings

Table.Group(#"Changed Type", {"Target"}, {{{"Total target amount by month", each List.Median({Month

	\$ Target	Total target amount by month
1	10,400.00	01-04-2018
2	10,500.00	01-05-2018
3	10,600.00	01-06-2018
4	10,800.00	01-07-2018
5	10,900.00	01-08-2018
6	11,000.00	01-09-2018
7	11,100.00	01-10-2018
8	11,300.00	01-11-2018
9	11,400.00	01-12-2018
10	11,500.00	01-01-2019
11	11,600.00	01-02-2019
12	11,800.00	01-03-2019
13	12,000.00	01-05-2018
14	14,000.00	01-08-2018
15	16,000.00	01-01-2019
16	9,000.00	01-08-2018

PROPERTIES

Name
Sales target

All Properties

APPLIED STEPS

- Source
- Promoted Headers
- Changed Type
- X Total target amount by month**

Data Modeling

1. Establish a relationship between the “List of Orders” and “Order Details” tables using

the 'Order ID' column.

The screenshot shows the Power BI Desktop interface. On the left, the 'Order Details' table is expanded, showing columns: Amount, Category, Order ID, Profit, Profit Margin, Profit Status, and a 'Collapse' button. In the center, the 'List of Orders' table is expanded, showing columns: City, CustomerName, Location, Order Date, Order ID, and a 'Collapse' button. A relationship line connects the 'Order ID' column of 'Order Details' to the 'Order ID' column of 'List of Orders'. The cardinality is 'Many to one (*:1)'. On the right, the 'Properties' pane is open, showing the relationship settings for 'Order Details' to 'List of Orders' based on the 'Order ID' column. The cardinality is 'Many to one (*:1)'. The 'Make this relationship active' toggle is turned on. The 'Cross-filter direction' is set to 'Single'. The 'Apply security filter in both directions' toggle is turned off.

2. Build a relationship between the "Order Details" and "Sales Target" tables based on the 'Category' column. Click "Manage relationships" and ensure this relationship is active.

The screenshot shows the Power BI Desktop interface. On the left, the 'Order Details' table is expanded, showing columns: Amount, Category, Order ID, Profit, Profit Margin, Profit Status, and a 'Collapse' button. In the center, the 'Sales target' table is expanded, showing columns: Category, Month of Order Date, Target, and a 'Collapse' button. Below it, the 'List of Orders' table is also expanded, showing columns: City, CustomerName, Location, Order Date, Order ID, and a 'Collapse' button. A relationship line connects the 'Category' column of 'Order Details' to the 'Category' column of 'Sales target'. The cardinality is 'Many to many (*:*)'. On the right, the 'Properties' pane is open, showing the relationship settings for 'Order Details' to 'Sales target' based on the 'Category' column. The cardinality is 'Many to many (*:*)'. A warning message is displayed: 'This relationship has cardinality Many-Many. This should only be used if it is expected that neither column (Category and Category) contains unique values, and that the significantly different behavior of Many-Many relationships is understood. [Learn more](#)'. The 'Make this relationship active' toggle is turned on.